



# Crate Recovery

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

A large, light-colored lotus flower with a bright yellow center is centered in the background of the slide. The petals are layered, creating a star-like shape.

Crate Reset:  
The Five-Fold path to  
enlightenment

The power will be yours!  
Bwa-ha-ha-ha-ha!



## FrontEnd Control I/O

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

### Ethernet port:

- vxlogin
- RunControl transitions

TCP/IP 100 Mb/s

### Serial port:

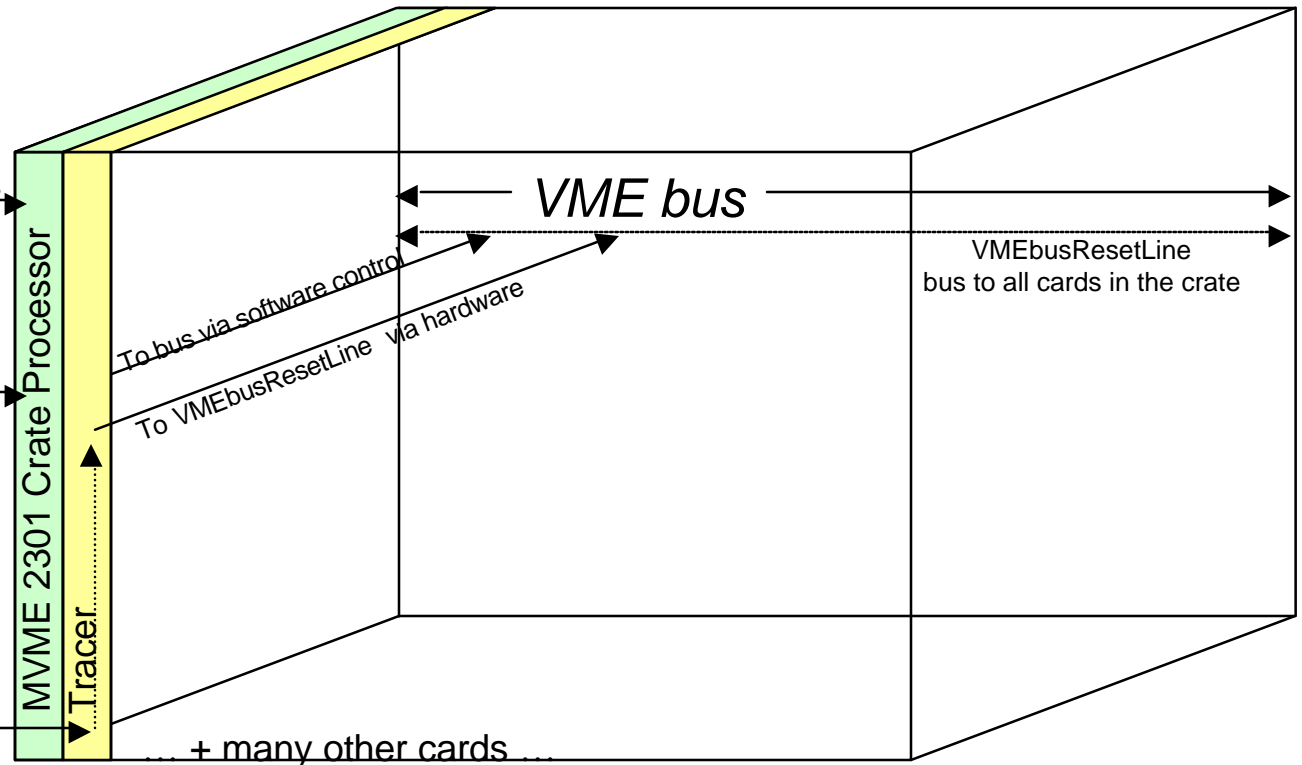
- minicom on *b0dap10*
- FrontEndConsole from RunControl local controller

serial 9600 baud

### Reset line:

- reset\_crate
- Reboot, Reset, Shepherd... from RunControl local controller
- originates at *b0res00* crate

unidirectional pulse



*From three into many...*



## The Five Fold Way

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

<u>Command</u>	<u>CPU Reboot</u>	<u>VME Crate Reset</u>
<b>Reboot, Reset and Shepherd Crate</b> From the RunControl <b>LocalClientController</b> ; uses VISIONdemo bus reset and optionally reset line	yes	yes
<b>reset_crate</b> After <i>setup fer</i> from unix shell; proceeds via reset line to tracer and then on to VME bus	yes	yes
<b>VISIONdemo, 9, 10</b> After <i>setup fer</i> from unix shell, or after logging into crate with <b>vxlogin</b> or <b>minicom</b> ; proceeds via software on to the VME bus; TDCs prefer this!	yes	yes
<b>vxboot</b> After <i>setup fer</i> from unix shell; logs into crate processor and reboots via software	yes	no
<b>reboot</b> After logging into crate with <b>vxlogin</b> or <b>minicom</b> , equivalent to <b>vxboot</b>	yes	no



## CPU vs. Crate Reset

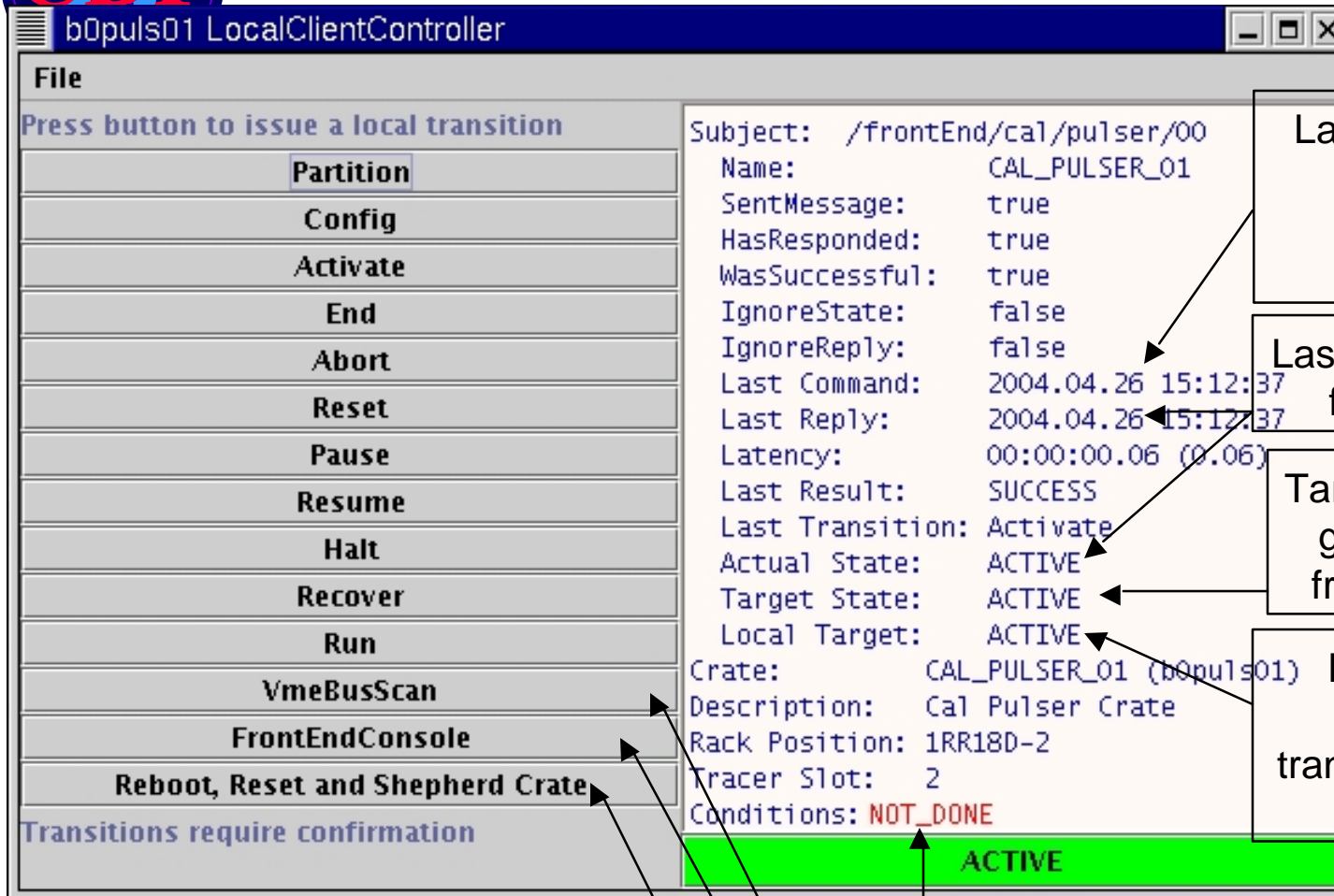
W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

- CPU Reset
  - Clears up any software problems or heap corruption
  - Nicer to SmartSockets rtserver
  - Does not touch any other card in the crate
- VME Bus Crate-wide Reset
  - Also reboots CPU
  - Resets all cards in the crate via the VME bus reset line
  - Often needed by readout cards, e.g. TDCs are a popular candidate to benefit from VME bus reset
  - May leave dangling connection to SmartSockets rtserver
- For persistent hardware problems, neither reset may be successful
  - Important to contact appropriate expert as soon as possible in this case



# LocalClientController

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004



Last transition command time, from main RunControl or this individual controller

Last known state as issued from client, with time

Target state to match the global expected state from main RunControl

Local target state to match the last local transition issued from this individual controller

Presence of these buttons while *Active* indicates a VME crate which can be recovered in the middle of a run

Error States of this crate:

- (clear)
- ERROR
- NOT\_DONE
- VRB\_BUSY

Any of these three error conditions will make the Reply/Ack button turn **red**



## FrontEndConsole

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

After a *Reboot*, *Reset* and *Recover Crate* command,  
a **FrontEndConsole** appears, showing the boot  
process, much like **minicom**

```
FrontEndConsole b0cmu00
value = 0 = 0x0
#
#sp timeStamp,60
#
cd "~vxworks/boot/front-end"
value = 0 = 0x0
#
<startup.cdfvme
#
# startup script for cdfvme_common
#
#
ld < ${CDFVME_COMMON_DIR}/server/lib/${VXB_DEST_ENV}/${VXB_DEST_ARCH}/CrateVme
value = 15235760 = 0xe87ab0
#
# Do custom startup
#
< ${CUSTOM_STARTUP}
```

VISIONdemo

AutoScroll NoAutoScroll

Don't forget to *kticket*  
A valid kerberos ticket is  
necessary for this feature to work

*FrontEndConsole* uses the hardware *serial* line  
connected to the crate processor, just like *minicom*; if  
serial line is broken, you won't see the crate booting,  
but the reset and recovery should still proceed via the  
*reset* line to the Tracer



# FrontEndConsole

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

How a FrontEndConsole looks like after a successful  
shepherding into the *Halted* state

```
FrontEndConsole b0cmu00
Slot 2: 0156 001 TRACER_V2.1A
Slot 5: 0242 009 MICHIGAN TDC LVDS Rev D
Slot 6: 0143 008 MICHIGAN TDC ECL Rev D
Slot 7: 0237 008 MICHIGAN TDC ECL Rev D
Slot 9: 0381 008 MICHIGAN TDC ECL Rev D
Slot 10: 0390 008 MICHIGAN TDC ECL Rev D
Slot 11: 0377 008 MICHIGAN TDC ECL Rev D
Slot 13: 0398 008 MICHIGAN TDC ECL Rev D
Slot 14: 0396 008 MICHIGAN TDC ECL Rev D
Slot 15: 0255 008 MICHIGAN TDC ECL Rev D
Slot 17: 0121 008 MICHIGAN TDC ECL Rev D
Slot 18: 0109 008 MICHIGAN TDC ECL Rev D
Slot 19: 0240 008 MICHIGAN TDC ECL Rev D
Messenger: processStatechange Activate [0]
Starting run 2 at 1044916481
Sent ack to Run Control: 7 ACTIVE SUCCESS
Messenger: processStatechange Halt [0]
Sent ack to Run Control: 7 HALTED SUCCESS
```

VISIONdemo

AutoScroll NoAutoScroll

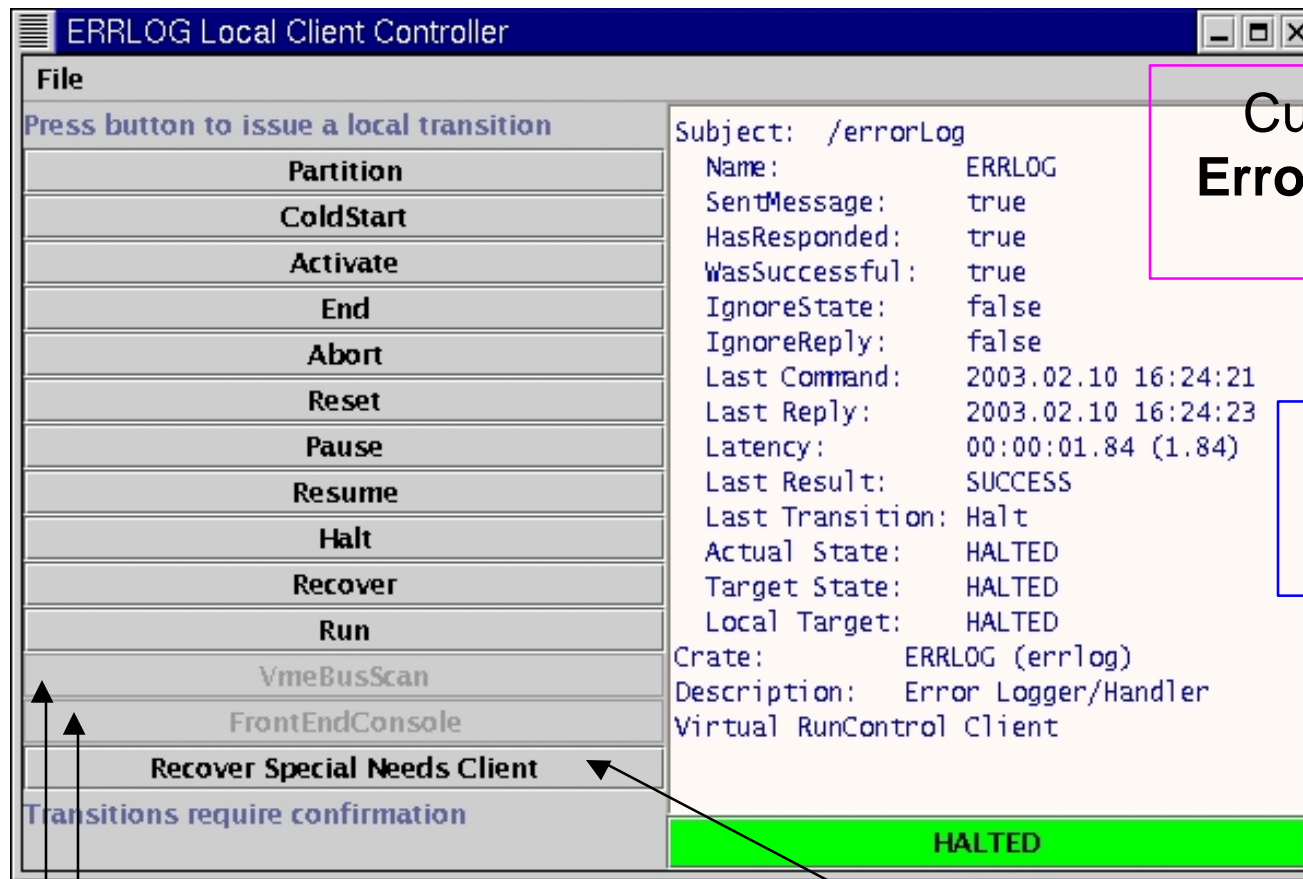
If someone is logged into the crate elsewhere via *vxlogin* or *minicom*, then you may see very little on this console, but, again, the reboot and recovery process will still proceed

You can type in crate commands in the input field, much like *vxlogin* or *minicom*



## Special Needs Clients

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004



Currently only the  
**ErrorLogger** can use  
this feature

SlowControl may be  
another customer  
(in the future)

Disabled buttons indicate this is not a  
VME crate

*Special Needs* Virtual RunControl  
clients must be restarted per their  
special instructions before shepherding





## ClientMonitor

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

After issuing Recover Special Needs Client, a special logging window *ClientMonitor* will appear in lieu of a *FrontEndConsole*

```
ClientMonitor errlog
2003.02.10 16:39:32 Recovering client ERRLOG ...
2003.02.10 16:39:34 Issuing RESET
2003.02.10 16:39:36 Trying Partition
2003.02.10 16:39:39 Successful transition Partition
2003.02.10 16:39:42 Trying ColdStart
2003.02.10 16:39:44 Successful transition ColdStart
2003.02.10 16:39:44 Trying Activate
2003.02.10 16:39:45 Successful transition Activate
2003.02.10 16:39:45 Trying Halt
2003.02.10 16:39:45 Successful transition Halt
2003.02.10 16:39:45 Successful transition Halt
2003.02.10 16:39:45 Successfully shepherded client ERRLOG
2003.02.10 16:39:45 Successfully shepherded crate ERRLOG
```

AutoScroll NoAutoScroll

Close the FrontEndConsole and ClientMonitor windows when they are no longer needed

How a Special Needs *ClientMonitor* looks like after a successful shepherding into the *Halted* state



## Shepherding Status

W. Badgett  
Run Control  
Crate Recovery  
27-Apr-2004

- Some clients and crates should never be recovered in the middle of a run
  - <http://www-cdfonline.fnal.gov/ace2help/runControl/shepherding.html>
  - L1, L2, L3, HEVB, SEVB, CLC, CSL, Scalers (b0tsi03)
  - Function will be disabled in *LocalClientController* window
- Some front-end crates have reset line or serial line broken
  - All crates in collision hall working
  - JDL promises to fix remaining (upstairs) crates this week
  - As long as reset line or serial line works, shepherding will work
    - although you may see warnings
    - no crate has both reset and serial lines broken
- Normally best to use RunControl to reset crates
  - RunControl does the nicest cleanup of tasks and connections
  - If not possible, use the command line methods